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(54) TACKY MAT STACK

(71) I, JOHN JOSEPH NAPPI, of 80 Beckley Road, Berlin, Connecticut, United States of America, a citizen of the United States of America, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates generally to a tacky mat stack adapted to remove accumulated dirt particles from the underside of shoes or other traffic during passage thereof across the mat. More particularly, it is directed to a new and improved tacky mat construction which facilitates the easy sequential removal of each uppermost mat sheet from the stack.

A tacky mat stack of the type involved in this invention has been described in detail in my earlier United States Patent No. 3,083,393 (U.K. Specification No. 1,138,103). Broadly, it consists of a plurality of superimposed coextensive sheets, each having a pressure-sensitive adhesive on the top surface thereof. As will be appreciated, the tightly woven fabric or cloth backing of each adhesive sheet necessarily exhibited sufficient strength to be stripped or peeled from the stack without tearing or rupturing. Accordingly, a tightly woven, strong and sturdy fabric has heretofore been used for this purpose.

Unfortunately, the constant passage of pedestrian traffic across a stack containing several adhesive sheets constantly forces the cloth backing of each sheet into intimate engagement with the adhesive tread surface on the adjacent underlying sheet. This disadvantageously causes the adhesive to penetrate the cloth backing, resulting in the tight bonding or welding of the superimposed sheets to each other. This problem is particularly evident on the lowermost sheets of the stack and creates substantial difficulty in

effecting the desired stripping or peeling of the soiled layers from the mat stack.

Accordingly, in my United States Patent No. 3,501,797 (U.K. Specification No. 1,243,445) there is described a stack construction incorporating a transversely extending pull string at one end of each sheet for effecting preliminary release of the end portion of the top sheet. As indicated in that patent the pull string is merely interposed between adjacent sheets and is not secured thereto. As the string is pulled from its rest position, it effects a sweeping motion to produce the desired initial releasing action. However, this construction does not reduce the tendency of the sheets to adhesively weld to one another. Additionally, the sheets of the mat stack are not provided with means for securely gripping the individual sheets themselves, and unless great care is taken to ensure the continued separation of the string-released sheet portion, it will readily reengage the underlying sheet and due to its tacky nature will immediately adhere thereto causing substantial difficulty in effecting the desired separation.

Attempts to insert conventional release layers, such as a layer of silicone treated paper or the like, between the tacky mat sheets of the stack in order to prevent the undesirable bonding or welding of these superimposed sheets has proved unsatisfactory. Such release layers disadvantageously permit sliding and other movement of the sheets relative to each other, thereby creating a safety hazard for the user of the mat and unwanted adhesion of the top mat sheet to the pedestrian traffic using the mat.

Accordingly, it is a primary object of the present invention to provide a new and improved tacky mat stack of pressure-sensitive adhesive coated sheets exhibiting ease of separation, coupled with relative immovability between the sheets of the stack during use.

The present invention provides a tacky

mat stack suited for the passage of pedestrian traffic thereacross and the concurrent adhesive removal of dirt particles from said traffic by the tread surface on the uppermost sheet of said stack, and comprising a plurality of superimposed tacky mat sheets of composite laminar construction wherein each superimposed sheet comprises a flexible support film having an integral adhesive-impermeable barrier surface extending across essentially the full underside thereof and a pressure-sensitive adhesive coating carried on the top side of said support film and forming an upwardly facing pressure-sensitive adhesive tread surface of the sheet, said coating being in secure non-delaminating engagement with said support film to provide said composite laminar structure, said barrier surface preventing penetration therethrough of the adhesive carried by an underlying sheet and consequent adhesive welding of super-imposed sheets during the passage of pedestrian traffic across the stack, and said barrier surface facilitating easy separation of each topmost sheet after passage of pedestrian traffic thereon while preventing inadvertent relative movement between the superimposed sheets of the stack.

The sheets can incorporate materials that independently might not exhibit the requisite strength characteristics but when combined provide an extremely strong and durable structural relationship in a highly efficient and economical manner without disadvantageously increasing the thickness of the adhesive sheet structure.

The sheets preferably consist of a thin, highly flexible support film forming an adhesive barrier surface on the underside of the sheet, a reinforcing fibrous web coextensive with the support film and firmly secured thereto and a pressure-sensitive adhesive coating carried by the support film, the adhesive coating being in secure engagement with the reinforcing fibrous web. The adhesive coating penetrates and embeds the fibrous web therein and assures unified cooperative action between the supporting film and the reinforcing web.

A better understanding of the invention will be obtained from the following detailed description and the accompanying drawing which set forth an illustrative embodiment of the invention.

In the drawing:

Figure 1 is a perspective view of an embodiment of the tacky mat stack of the present invention mounted within a suitable frame;

Fig. 2 is an exploded perspective view of the tacky mat stack of Fig. 1 with a portion of the frame broken away and some of the mat sheets arranged to show both their top and bottom surfaces;

Fig. 3 is an enlarged sectional view taken along the line 3—3 of Fig. 2 illustrating the composite laminar construction of a single mat sheet; and

Fig. 4 is an enlarged perspective view of the improved pull tab portion of the tacky mat stack illustrating the ease with which an overlying adhesive sheet can be removed from the stack.

Referring now to the drawing in greater detail wherein like reference numerals indicate like parts throughout the several figures, a tacky mat assembly 10 is illustrated as being comprised of a generally rectangular mat stack 12 of flat superimposed adhesive sheet material securely mounted within an appropriate frame member 14. Although the particular frame used with the stack may be of the type described in greater detail in my earlier United States Patent No. 3,083,393, the illustrated frame 14 is of a type having a flat base 16 to which the stack 12 is directly adhered and from which it is subsequently stripped. The frame may be made of any suitable material, such as aluminum.

The assembly 10 including the stack 12 of pressure-sensitive adhesive sheets is usually located within a pedestrian traffic passageway and is particularly useful in the industrial field where delicate or dust-free manufacturing operations or techniques are performed or where environmental control is essential, such as in clean rooms and the like. It will, of course, be appreciated that the tacky mat stack of the present invention also has beneficial hospital uses, as at the entry to operating rooms or other areas wherein control of dust particles is desired.

As described in my aforementioned patents, the stack may be mounted on a flat, generally rectangular base member, such as a "Masonite" (Registered Trade Mark) board having dimensions slightly greater than the adhesive sheets carried thereby. However, as illustrated in Fig. 2, the stack 12 of the present invention is advantageously applied directly to the base 16 of the frame 14 and fully removed therefrom in a sequential manner after use of each uppermost sheet.

The lowermost adhesive sheet 18 of the stack 12 is generally of the type described in my earlier patents in that it is double faced with adhesive while the remaining or overlying sheets 20 are substantially identical, have adhesive on only the tread surface thereof and incorporate the composite laminar sheet construction of the present invention. The bottom surface 24 of lowermost sheet 18 is provided with a full coating of highly tacky adhesive for securely attaching that sheet to the base 16 of the frame. As will be appreciated, the adhesive on the surface 24 preferably possesses

